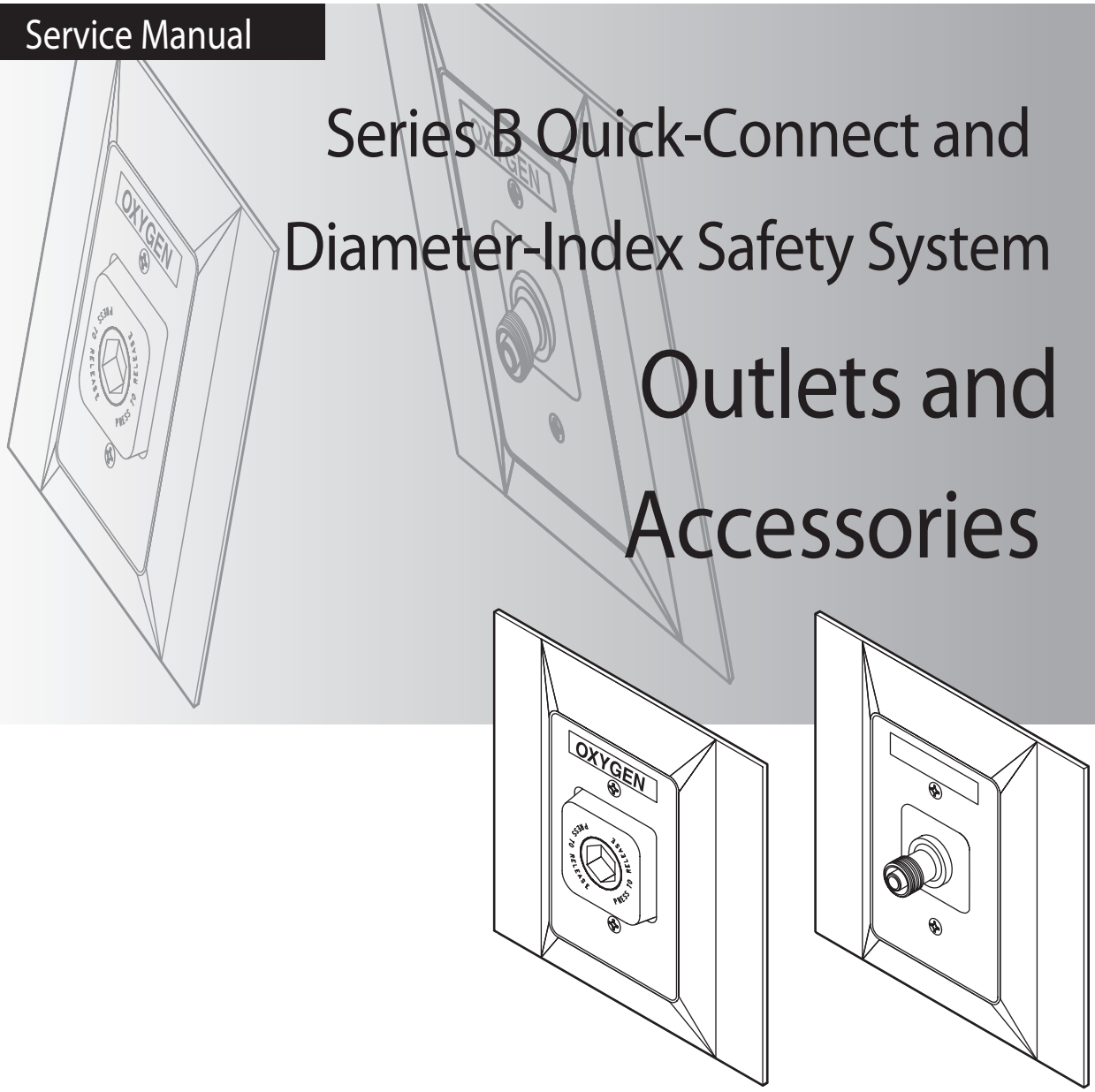
Service Manual

Series B Quick-Connect and Diameter-Index Safety System

Outlets and Accessories



BeaconMedæs®

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Introduction

This manual provides the information needed to service Beacon Medical Products Series B Medical Gas Wall Outlets. The information contained in this manual is intended for use by technicians or personnel qualified to repair and service medical equipment.

Definition of Statements

Statements in this manual preceded by the following words are of special significance.

WARNING: Means there is a possibility of injury or death to yourself or others.

CAUTION: Means there is a possibility of damage to the unit or other property.

NOTE: Indicates points of particular interest for more efficient and convenient operation.

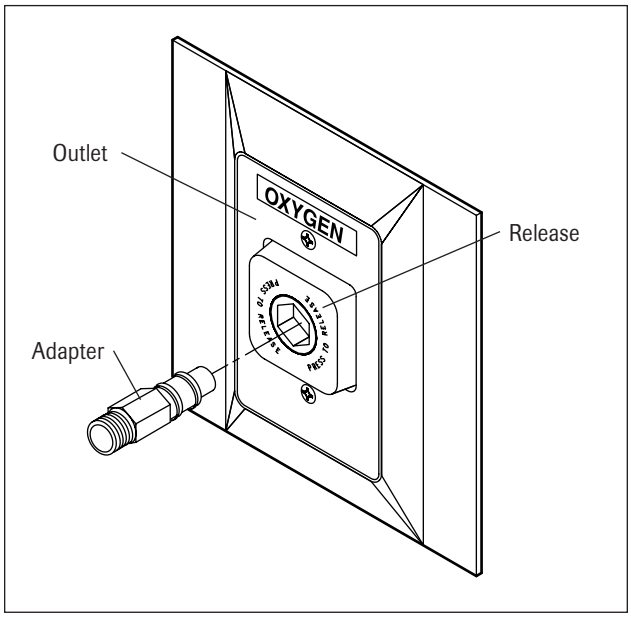
General Product Description

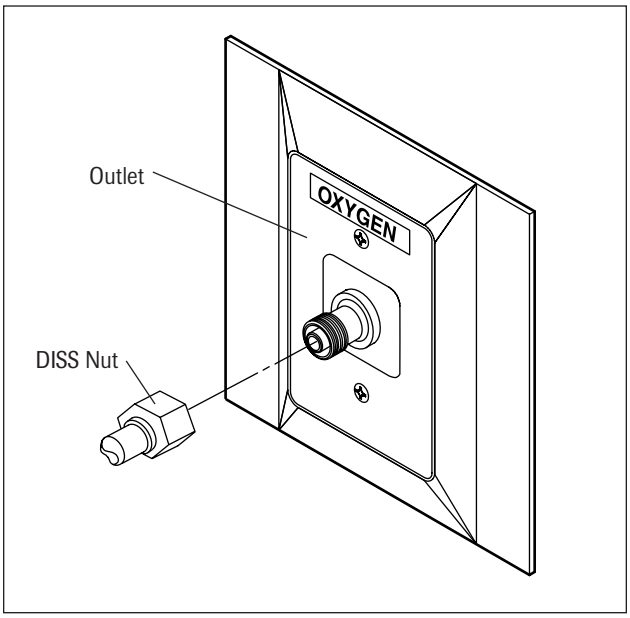
Beacon Medical Products medical gas and vacuum quick-connect outlets provide a means of connecting to the medical gas piping system. When the appropriate adapter is inserted in the outlet, the primary valve is opened, permitting gas to flow. A mechanical latch secures the adapter in the outlet. The primary seal closes when the adapter is removed.

Outlets are typically for oxygen, nitrous oxide, air, or vacuum and have been cleaned for the indicated service.

Threaded outlets are typically used in ceilings of operating rooms or in place of quick-connect outlets. Connection to the outlet is by means of a nut and nipple. Gas-specific indexing to prevent accidental connection to the wrong service is accomplished by a series of interference diameters in accordance with the Diameter-Index Safety System (DISS) published by the Compressed Gas Association (CGA) in Standard V-5. The nipple opens the primary valve as the nut is tightened to secure the nipple in the outlet. The primary valve closes when the nipple is removed.

WARNING:
Do not use oil on adapters or outlets.





Tools and Service Materials

Description	Manufacturer
Silicone lubricant, Dow Corning compound #4	Local source
Truarc® Pliers .038	Local source
No. 2 Phillips screwdriver	Local source
No. 2 Flat blade screwdriver	Local source
Oxygen compatible leak detector solution	Sherlock or equivalent

Cleaning and Lubrication

Beacon Medical Products outlets are cleaned for oxygen or the indicated service. Exposed surfaces of outlets may be cleaned with a mild detergent solution or wiped with a disinfectant used for patient room surfaces that is compatible with acetal and nylon plastic, anodized aluminum, and die cast zinc.

Lubricate elastomer seals sparingly with a lubricant compatible with oxygen. Refer to Tools and Service Materials. **DO NOT USE OIL**.

Inspection and Testing

Medical gas outlets in high use areas should be inspected at least every six months and more frequently if outlets are used daily. All outlets should be inspected at least once a year.

Follow National Fire Protection Association Standard 99, 99C "Gas and Vacuum Systems," and Canadian Standards Association, Standard Z 305.1 "Nonflammable Medical Gas Piping Systems" requirements and methods for periodic testing and maintenance of medical gas and vacuum systems.

Service

Notify appropriate hospital personnel when performing service or maintenance to medical gas systems. Consult the Troubleshooting Guide to determine the required repair. Outlets incorporate a primary and secondary valve. The secondary valve prevents system gas from escaping when the primary valve is removed for service. The primary valve is contained in the quick-connect and DISS valve assemblies and the secondary valve is contained in the outlet block assembly which is brazed to the pipeline. Refer to Replacement Components for identification of replacement part numbers.

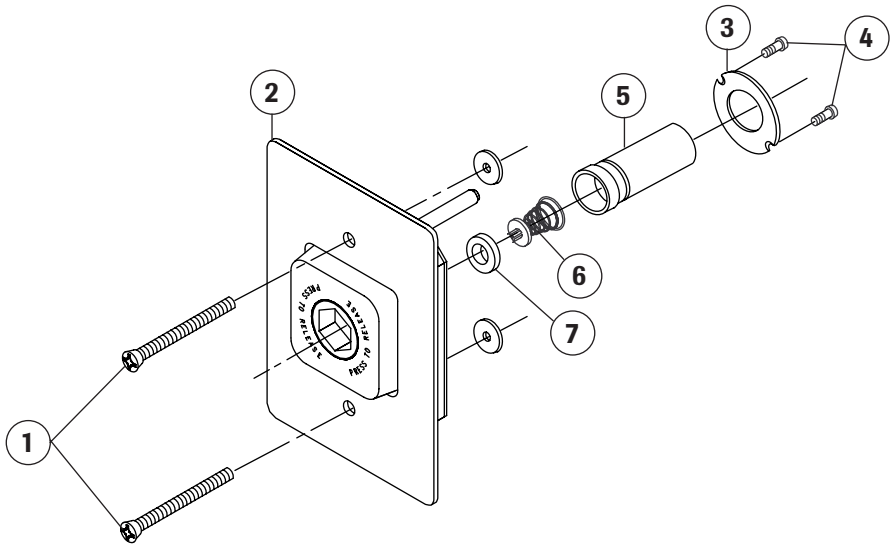
Quick-Connect and DISS Valve Assemblies (Primary Valve)

Quick-connect and DISS valves may be removed for replacement of seals and some components without interrupting service to other outlets in the piping system. If vacuum quick-connect or DISS valves are to be removed for a prolonged period of time, install a secondary seal plug (P/N 6-836843-PG) in the outlet block opening. To check a latch or DISS valve for leaks, apply leak detector solution at the primary valve opening both with and without the adapter connected. Bubbles indicate pressure leaks. Some leaks may be audible. The following instructions are for servicing a leaking latch or DISS valve.

NOTE:
Replace elastomer seals whenever outlets are disassembled.

Puritan-Bennett Quick-Connect Valve

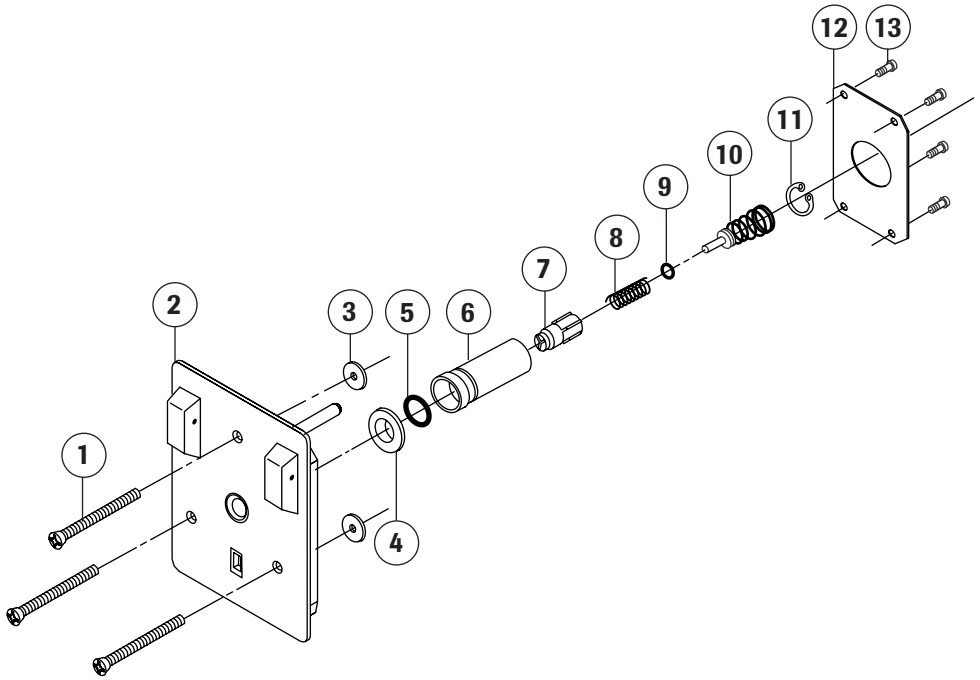
1. Back off the two mounting screws (1) until the latch valve (2) can be pulled from the outlet. As the screws are loosened, system pressure will push the latch valve from the outlet.
2. Remove the retaining ring (3) from the back of the valve assembly (2) by removing the two screws (4).
3. Remove the connector (5) from the valve assembly (2).
4. Remove the spring and poppet (6) and primary seal (7). Obtain a new primary seal (7). Inspect other items for wear or damage, and replace with new parts as necessary.
5. Reassemble the quick-connect valve.
6. Reinstall the latch valve in the outlet block. Coat the connector (5) with a thin film of silicone lubricant to aid in insertion. Use care not to overtighten mounting screws (1) as this can cause distortion of the latch valve.
7. Insert a gas-specific adapter in the latch valve. It should enter smoothly, latch, flow gas, and remain in place. If not, replace the entire latch-valve assembly (2).



Puritan-Bennett Quick-Connect Valve

Chemetron-Type Quick-Connect Valve

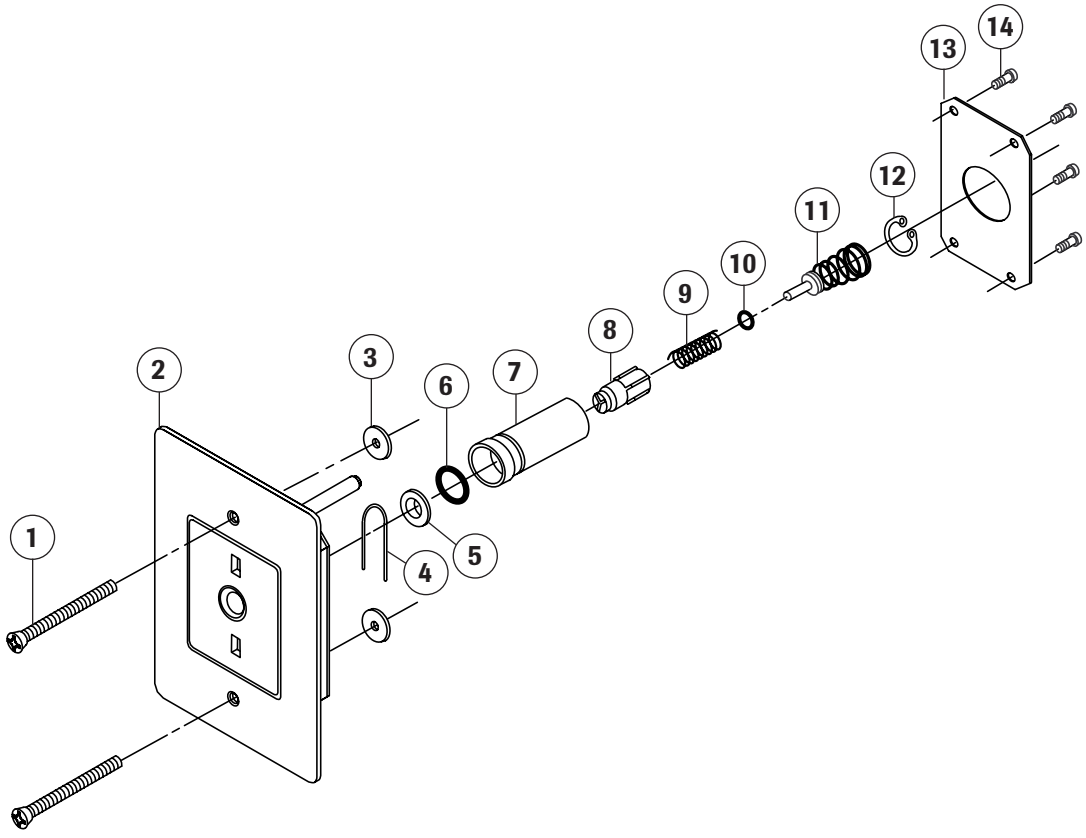
1. Back off the three mounting screws (1) until the latch valve (2) can be pulled from the outlet. Remove the two bottom screws first. As screws are loosened system pressure will push the latch valve from the outlet.
2. Remove the four screws (13) holding the back plate (12) in place.
3. Remove the connector (6) from the valve assembly.
4. Remove the washer (4) and secondary seal (5) from the front of the connector (6). Obtain a new secondary seal (5).
5. Remove the retaining ring (11) from the back of the connector (6) using Truarc pliers to compress the retaining ring. Remove the spring and poppet (10), primary seal (9), dust seal spring (8), and dust seal (7). Obtain a new primary seal (9). Inspect other items for wear or damage, and replace with new parts as necessary.
6. Reassemble the latch valve.
7. Reinstall the latch valve (2) in the outlet block. Coat the connector (6) with a thin film of silicone lubricant to aid in insertion. Use care not to overtighten mounting screws (1) which can cause distortion of the latch valve.
8. Insert a gas-specific adapter in the latch valve. It should enter smoothly, latch, flow gas, and remain in place. If not, replace the entire latch-valve assembly (2).



Chemetron-Type Quick-Connect Valve

Medaes-Type Quick-Connect Valve

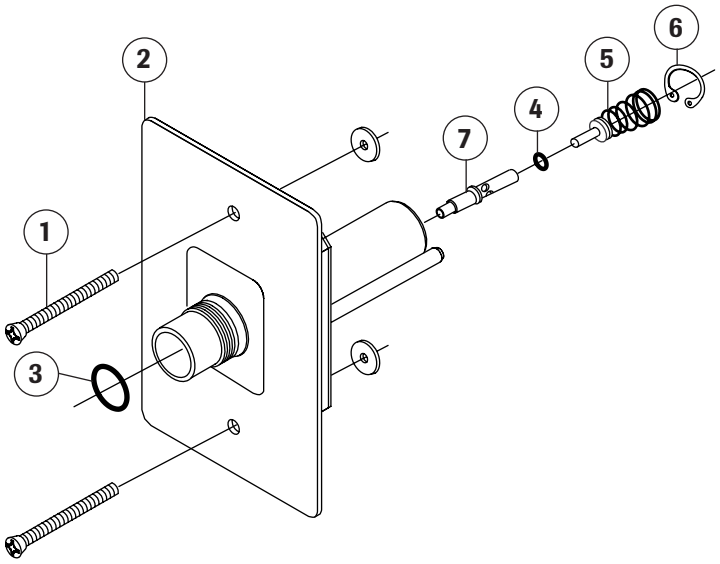
1. Back off the two mounting screws (1) until the latch valve (2) can be pulled from the outlet. As the screws are loosened, system pressure will push the latch valve from the outlet.
2. Remove the four screws (14) holding the back plate (13) on the latch valve (2).
3. Remove the connector (7). Remove the washer (5) and secondary seal (6) from the connector. Remove the spring (4) from the valve assembly. Obtain a new secondary seal (6).
4. Remove the retaining ring (12) from the back of the connector (7) using Truarc pliers to compress the retaining ring. Remove the spring and poppet (11), primary seal (10), dust seal spring (9), and dust seal (8). Obtain a new primary seal (10). Inspect other items for wear or damage, and replace with new parts as necessary.
5. Reassembly the latch valve (2).
6. Reinstall the latch valve (2) in the outlet block. Coat the connector (7) with a thin film of silicone lubricant to aid in insertion. Use care not to overtighten mounting screws (1) which can cause distortion of the latch valve(2).
7. Insert a gas-specific adapter in the latch valve. It should enter smoothly, latch, flow gas, and remain in place. If not, replace the entire latch-valve assembly (2).



Medaes-Type Quick-Connect Valve

DISS Valve

1. Back off the two mounting screws (1) until the DISS valve (2) can be pulled from the outlet.
2. Remove the O-Ring seal (3) from the front of the valve body. Install a new O-Ring seal (3). O-Ring seal (3) is used on all DISS valves except for oxygen and WAGD.
3. Remove the retaining ring (6) from the back of the valve assembly (2) using Truarc pliers to compress the retaining ring. Remove the spring and poppet (5), primary seal (4), and valve stem (7). Obtain a new primary seal (4). Inspect other items for wear or damage, and replace with new parts as necessary.
4. Reassemble the DISS valve (2).
5. Reinstall the DISS valve (2) in the outlet block. Coat the connector with a thin film of silicone lubricant to aid in insertion. Use care not to overtighten mounting screws (1) as this can cause distortion of the DISS valve (2).
6. Connect a gas-specific nut and nipple to the DISS valve. Connection should be smooth and hand tightening of the nut should be sufficient to allow gas flow without leakage. If not, replace the entire DISS valve assembly (2).



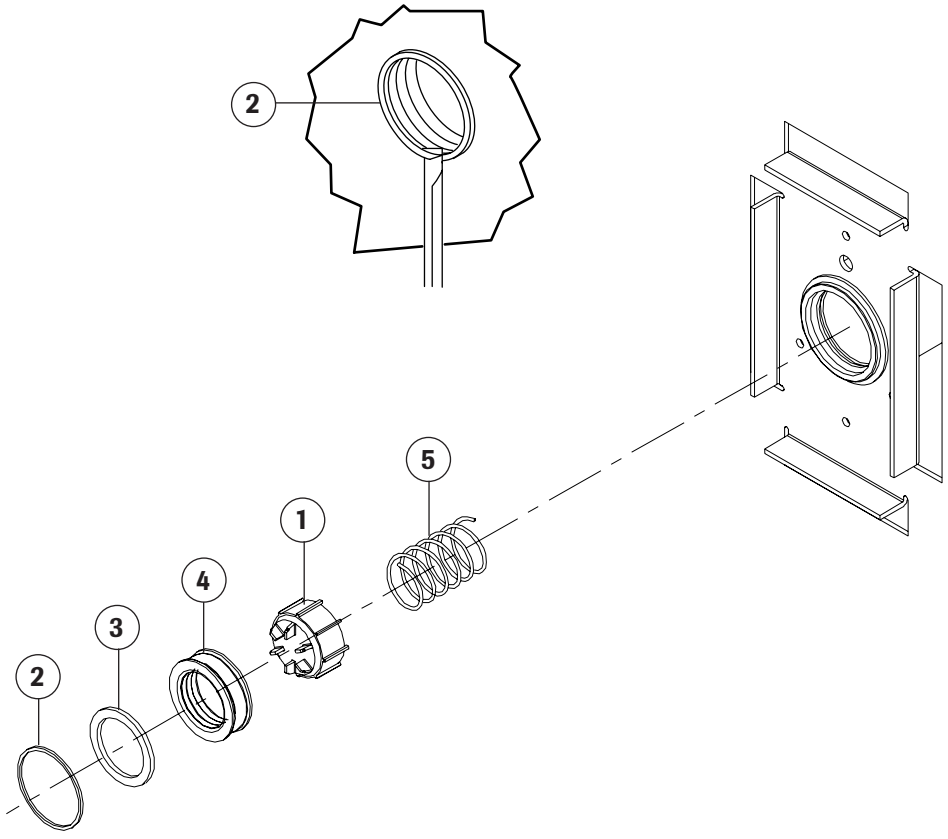
Diameter-Index Safety System Valve

Outlet Block Rough-In Assembly

WARNING:
Be certain to shut off supply pressure to the outlet before performing service.

Inside the pressure gas outlet block is a secondary valve. The secondary valve's function is to shut off pressure gas flow when the primary valve is removed. The secondary valve contains a seal to prevent leaks around the primary valve connector. As the secondary valve seal is only a static seal, the need for replacement is infrequent. Apply leak detector solution over the white poppet and the outer edge of the seal at the block. Look for bubbles indicating leaks (pressure systems). Also check for leaks when the latch or DISS valve connector is partially inserted by flowing leak detection solution around the connector. Listen for leaks in vacuum systems when the seal plug (P/N 6-836828-00) is installed. Below are instructions for servicing a leaking secondary valve seal.

1. Turn off outlet supply pressure.
2. Bleed residual pressure from the outlet by depressing the secondary valve poppet (1).
3. Remove the retaining ring (2) from the inside of the outlet valve block. Use a small screwdriver to carefully remove the ring as shown in the inset.
4. Remove the washer (3), seal (4), secondary valve poppet (1), and spring (5). Obtain a new seal (4). Inspect other items for wear or damage, and replace with new parts as necessary.
5. Reassemble the secondary valve.



Secondary Valve

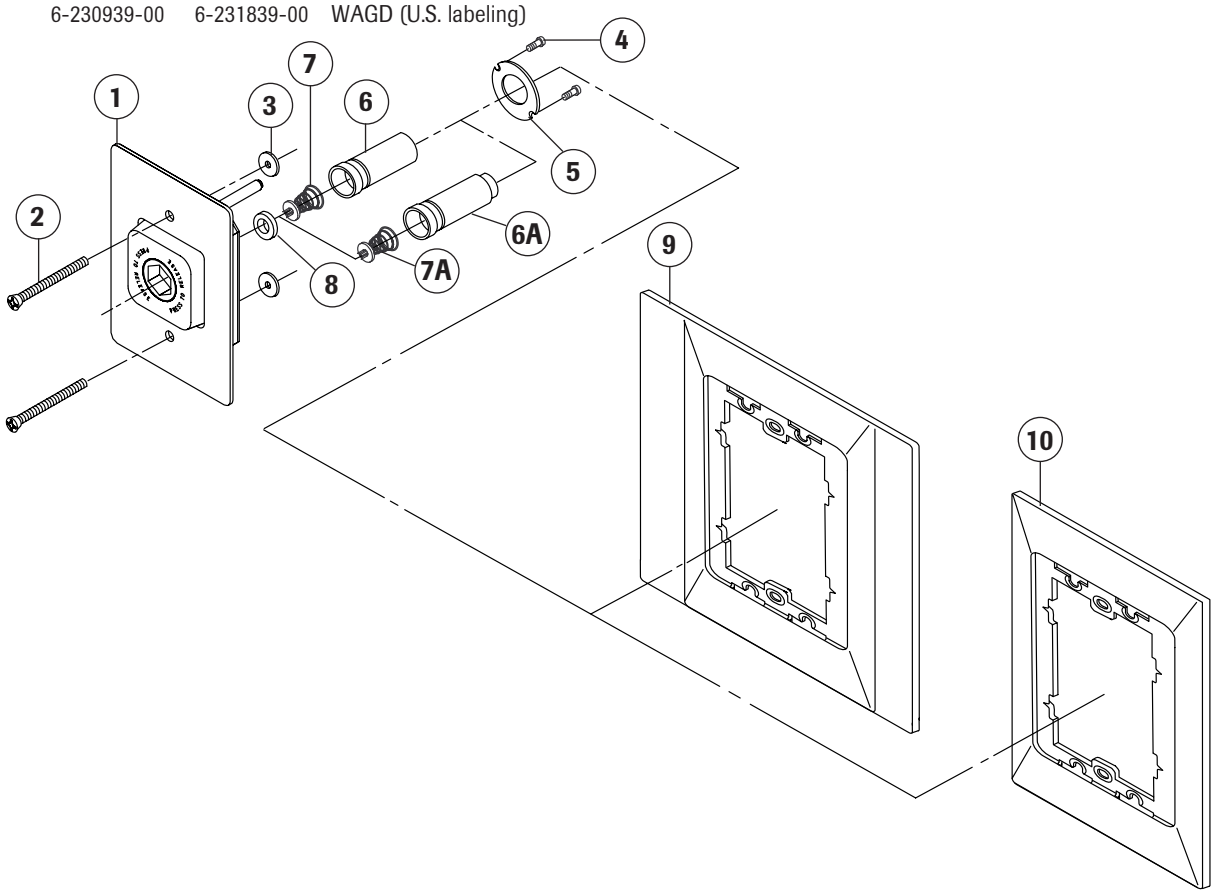
Troubleshooting Guide

Symptom	Possible Cause	Corrective Action
Quick-Connect or DISS Valve Leaks…		
• without quick-connect adapter in place.	• Faulty primary seal • Faulty spring and poppet	• Replace • Replace
• with quick-connect adapter in place.	• Faulty primary seal (PB only) • Faulty secondary seal (Chemetron and Medaes-type only) • Faulty quick-connect stem	• Replace • Replace • Replace
• without DISS nut and nipple in place • with DISS nut and nipple in place.	• Faulty primary seal • Faulty DISS nipple • Faulty O-Ring seal	• Replace • Replace • Replace
Adapter will not engage and/or release	• Damaged adapter • Wrong adapter • Damaged latch-valve assembly	• Replace adapter • Check adapter/outlet gas indexing and labels • Replace
Flow Rate Does Not Meet Specification	• Piping system pressure/vacuum incorrectly set • Restriction in piping system • System demand greater than supply source or system capacity	• Reset • Check system and/or outlet • Check supply source and system sizing
Outlet Pressure or Vacuum Does Not Meet Specification	• System pressure/vacuum not set correctly • System demand exceeds supply source capability or system capacity • Restriction in piping system or outlet	• Reset • Check supply source and system sizing • Check and remove

Puritan-Bennett Quick-Connect Valve Assembly

Item	Part No.		Description
1.			Puritan-Bennett quick-connect valve assembly (includes items 2 through 8) 6A and 7A not included
1A.			Quick-connect valve assembly for upgrade to Series B (includes items 2 through 5, 6A, 7A, and 8)
	Standard	Upgrade	
	6-230930-00	6-231830-00	Oxygen (U.S. labeling)
	6-230931-00	6-231831-00	Nitrous oxide (U.S. and International labeling)
	6-230932-00	6-231832-00	Air (U.S. labeling)
	6-230933-00	6-231833-00	Vacuum (U.S. labeling)
	6-230935-00	6-231835-00	Oxygen (International labeling)
	6-230937-00	6-231837-00	Air (International labeling)
	6-230938-00	6-231838-00	Vacuum (International labeling)
	6-230939-00	6-231839-00	WAGD (U.S. labeling)

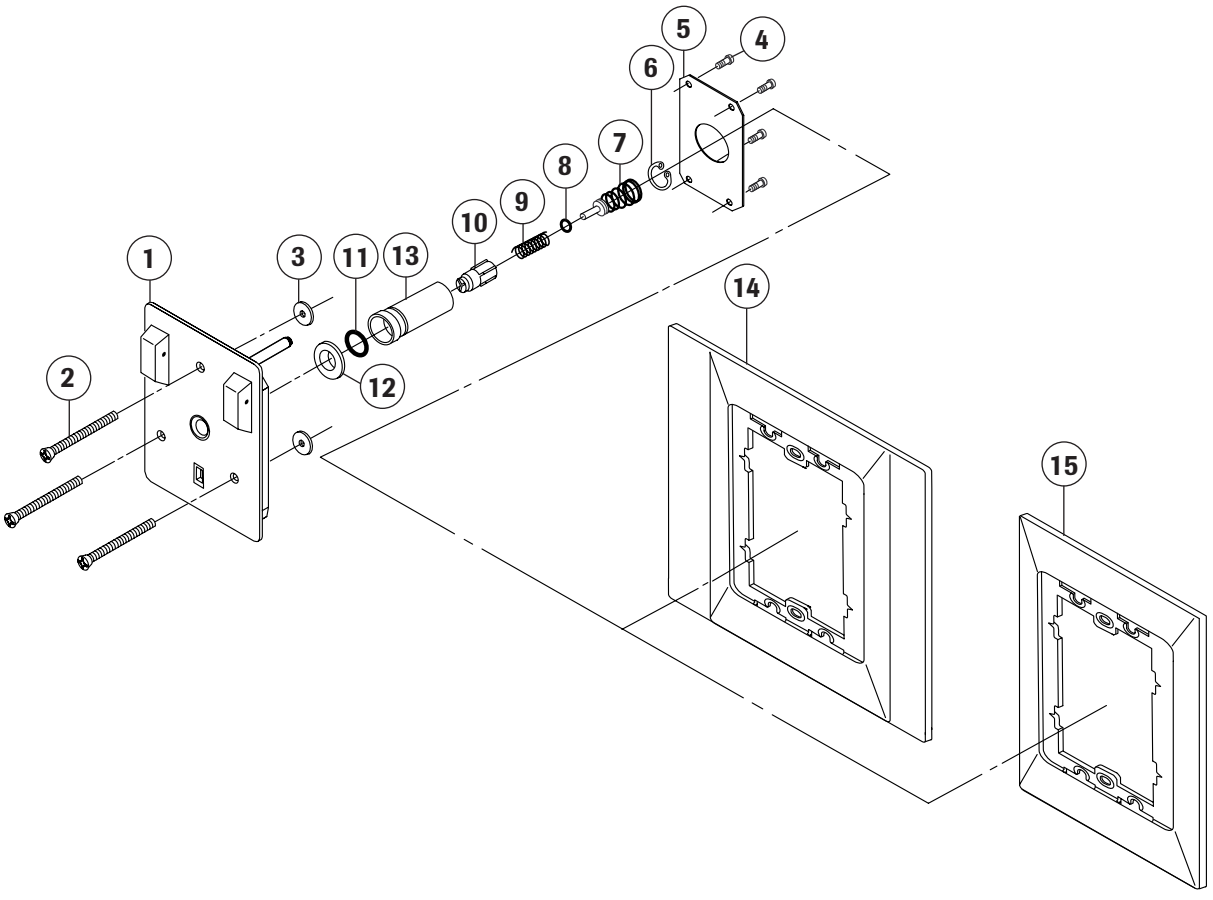
Item	Part No.	Description
2.	6-811151-PG	Mounting screw (two required, pkg of 10)
3.	6-621501-PG	Retaining washer (two required, pkg of 10)
4.	6-814653-PG	Screw (two required, pkg of 10)
5.	6-415102-00	Connector retainer
6.	6-525220-00	Connector
6A.	6-525248-00	Connector (valve upgrade)
7.		Spring and poppet kit
	6-230370-PG	Vacuum (pkg of 10)
	6-230078-PG	Pressure (pkg of 10)
7A.		Spring and poppet kit (valve upgrade)
	6-290477-PG	Vacuum (pkg of 10)
	6-290478-PG	Pressure (pkg of 10)
8.	6-290099-00	Seal (pkg of 25)
9.	6-325161-00	Tim Plate (5" center spacing)
10.	6-325160-00	Trim Plate (3 1/4" center spacing)



Puritan-Bennett Quick-Connect Valve Assembly

Chemetron-Type Quick-Connect Valve Assembly

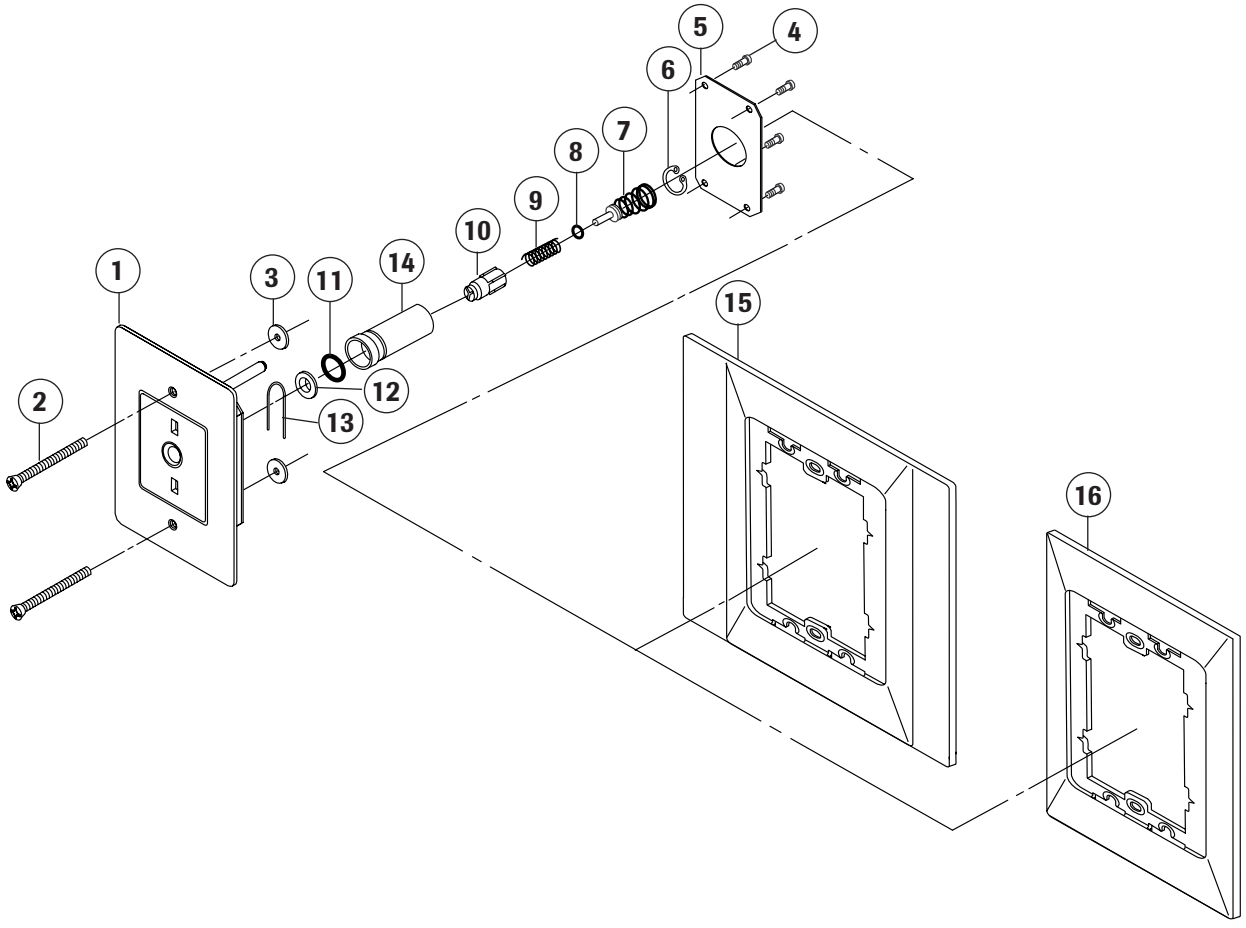
Item	Part No.	Description
1.		Chemetron-type quick-connect latch-valve assembly (includes items 2 through 13)
	6-230950-00	Oxygen (U.S. labeling)
	6-230951-00	Nitrous oxide (U.S. and international labeling)
	6-230952-00	Air (U.S. labeling)
	6-230953-00	Vacuum (U.S. labeling)
	6-230955-00	Oxygen (International labeling)
	6-230957-00	Air (International labeling)
	6-230958-00	Vacuum (International labeling)
2.	6-811151-PG	Mounting screw (three required, pkg of 10)
3.	6-621501-PG	Retaining washer (pkg of 10)
4.	6-815303-PG	Screw (four required, pkg of 10)
5.	6-415101-00	Back plate
6.	6-835505-PG	Retaining ring (pkg of 10)
7.		Spring and poppet kit (includes item 8)
	6-290458-PG	Chemetron vacuum and evacuation (pkg of 10)
	6-290459-PG	Chemetron pressure only (pkg of 10)
8.	6-622012-PG	O-Ring (pkg of 10)
9.	6-833430-00	Dust seal spring
10.	6-616275-00	Dust seal
11.	6-622570-PG	O-Ring (pkg of 10)
12.	6-415038-00	Washer
13.	6-525307-00	Connector
14.	6-325161-00	Trim Plate (5" center spacing)
15.	6-325160-00	Trim Plate (3 1/4" center spacing)



Chemetron-Type Quick-Connect Valve Assembly

Medaes-Type Quick-Connect Valve Assembly

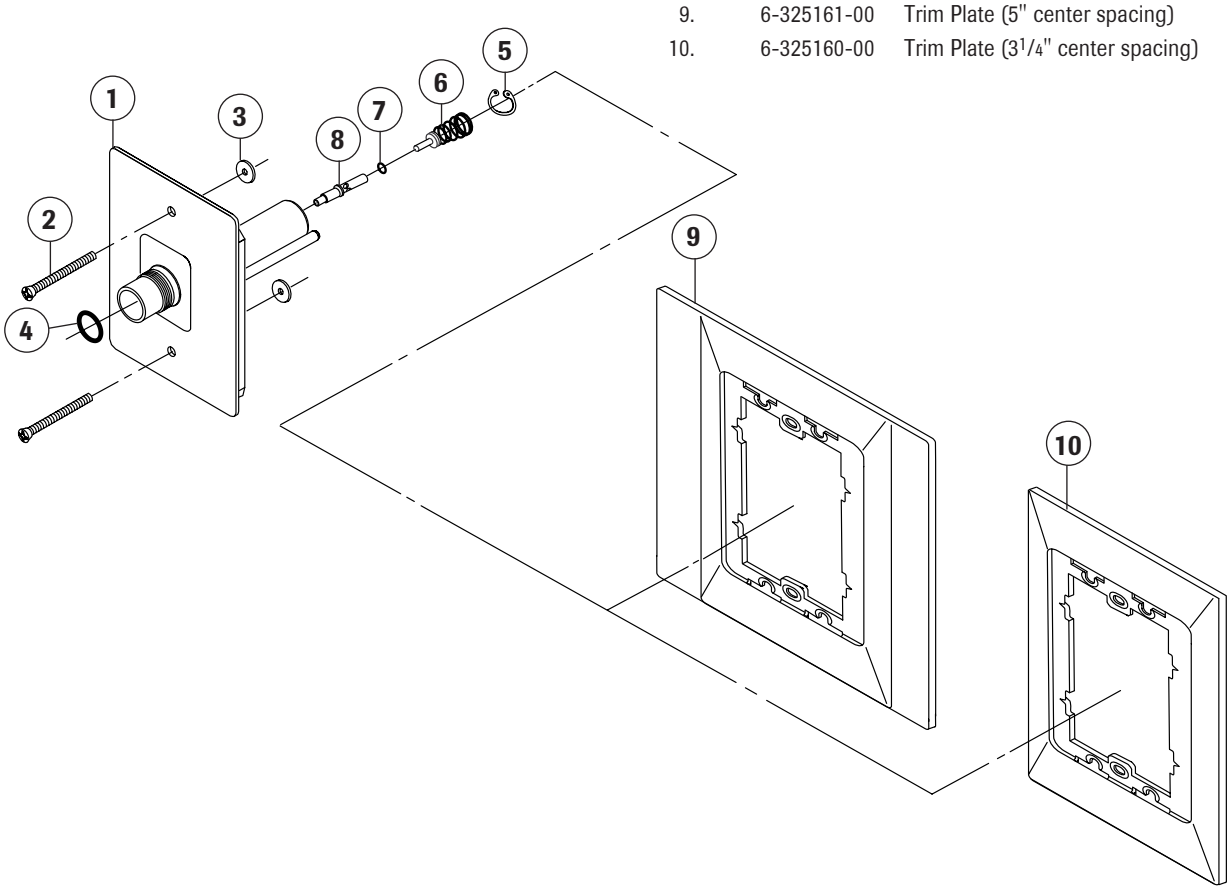
Item	Part No.	Description
1.		Medaes-type quick-connect latch-valve assembly (includes items 2 through 14)
	6-230940-00	Oxygen (U.S. labeling)
	6-230941-00	Nitrous oxide (U.S. and international labeling)
	6-230942-00	Air (U.S. labeling)
	6-230943-00	Vacuum (U.S. labeling)
	6-230945-00	Oxygen (International labeling)
	6-230946-00	WAGD (U.S. labeling)
	6-230947-00	Air (International labeling)
	6-230948-00	Vacuum (International labeling)
	6-230949-00	Evacuation (U.S. labeling)
2.	6-811151-PG	Mounting screw (two required, pkg of 10)
3.	6-621501-PG	Retaining washer (pkg of 10)
4.	6-815303-PG	Screw (four required, pkg of 10)
5.	6-415101-00	Back plate
6.	6-835505-PG	Retaining ring (pkg of 10)
7.	6-290458-PG	Spring and poppet kit (includes item 8) Medaes pressure, vacuum and evacuation (pkg of 10)
8.	6-622012-PG	O-Ring (pkg of 10)
9.	6-833430-00	Dust seal spring
10.	6-616276-00	Dust seal
11.	6-622570-PG	O-Ring (pkg of 10)
12.	6-415038-00	Washer
13.	6-833953-PG	Spring (pkg of 10)
14.	6-525222-00	Connector
15.	6-325161-00	Trim Plate (5" center spacing)
16.	6-325160-00	Trim Plate (3 1/4" center spacing)



Medaes-Type Quick-Connect Valve Assembly

DISS Valve Assembly

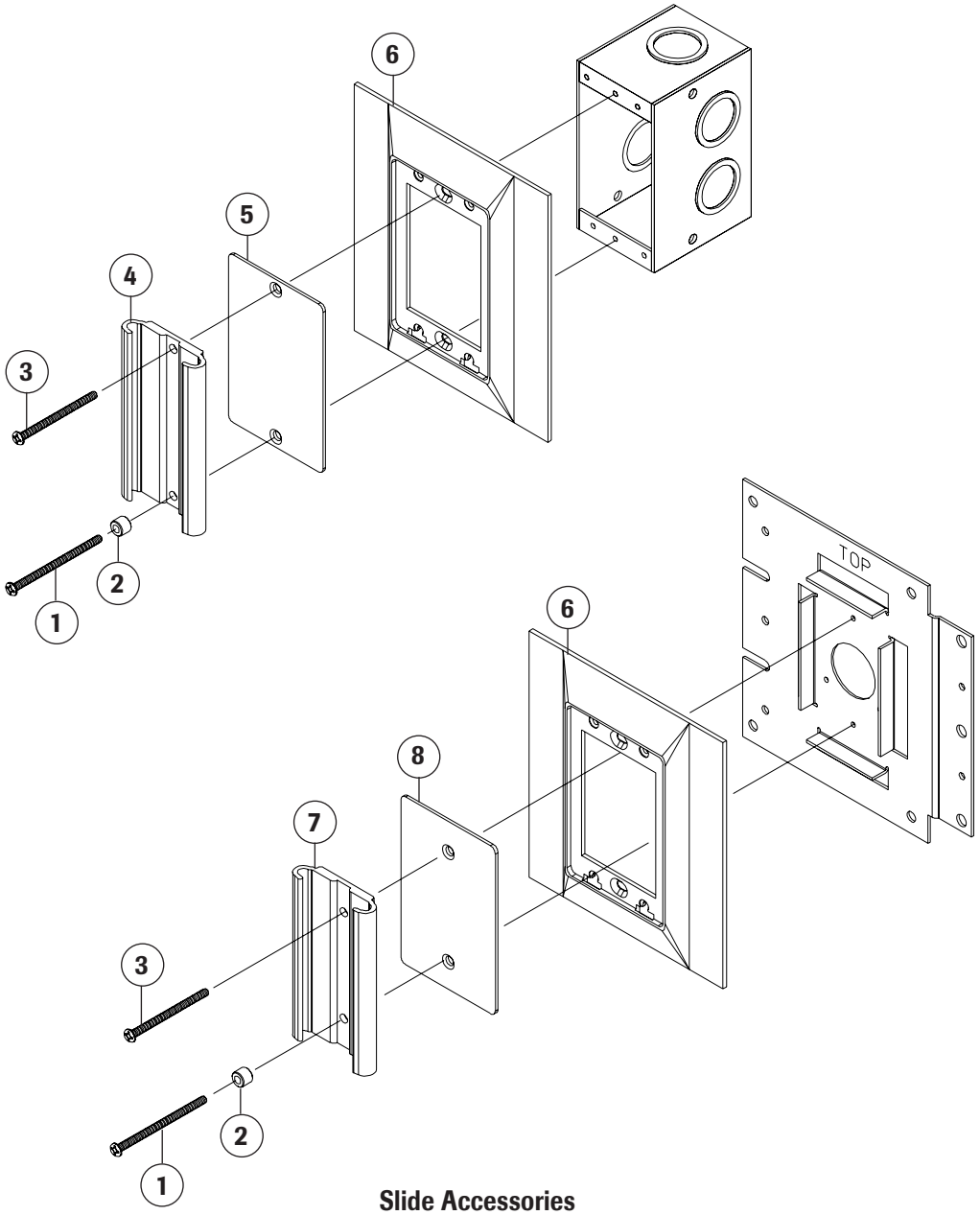
Item	Part No.	Description
1.		DISS valve assembly (includes items 2 through 8)
	6-230910-00	Oxygen (U.S. labeling)
	6-230911-00	Nitrous oxide (U.S. and international labeling)
	6-230912-00	Air (U.S. labeling)
	6-230913-00	Vacuum (U.S. labeling)
	6-230914-00	Nitrogen (U.S. and international labeling)
	6-230915-00	Oxygen (International labeling)
	6-230917-00	Air (International labeling)
	6-230918-00	Vacuum (International labeling)
	6-230919-00	WAGD (U.S. labeling)
	6-230920-00	Carbon dioxide (U.S. and international labeling)
	6-230921-00	CO_2/O_2 mixture (CO_2 over 7.5%)
	6-230922-00	O_2/CO_2 mixture (CO_2 not over 7.5%)
	6-230923-00	He/O_2 mixture (He over 80.5%)
	6-230924-00	O_2/He mixture (He not over 80.5%)
2.	6-811151-PG	Mounting screw (two required, pkg of 10)
3.	6-621501-PG	Retaining washer (two required, pkg of 10)
4.		O-Ring (pkg of 10)
	6-622537-PG	Air
	6-622036-PG	Vacuum
	6-622501-PG	Nitrogen
	6-622536-PG	CO_2, CO_2/O_2 mix, He/O_2 mix
	6-622538-PG	O_2/CO_2 mix
	6-622539-PG	Evacuation
	6-622508-PG	O_2/He mix
	6-622012-PG	N_2O
5.	6-835505-PG	Retaining ring (pkg of 10)
6.	6-290458-PG	Spring and poppet kit DISS pressure, vacuum and evacuation (includes item 7, pkg of 10)
7.	6-622012-PG	O-Ring (pkg of 10)
8.		Valve stem
	6-525223-00	Oxygen
	6-525224-00	Other gases
	6-525225-00	Vacuum
9.	6-325161-00	Trim Plate (5" center spacing)
10.	6-325160-00	Trim Plate ($3^1/_4$" center spacing)



DISS Valve

Slide Accessories

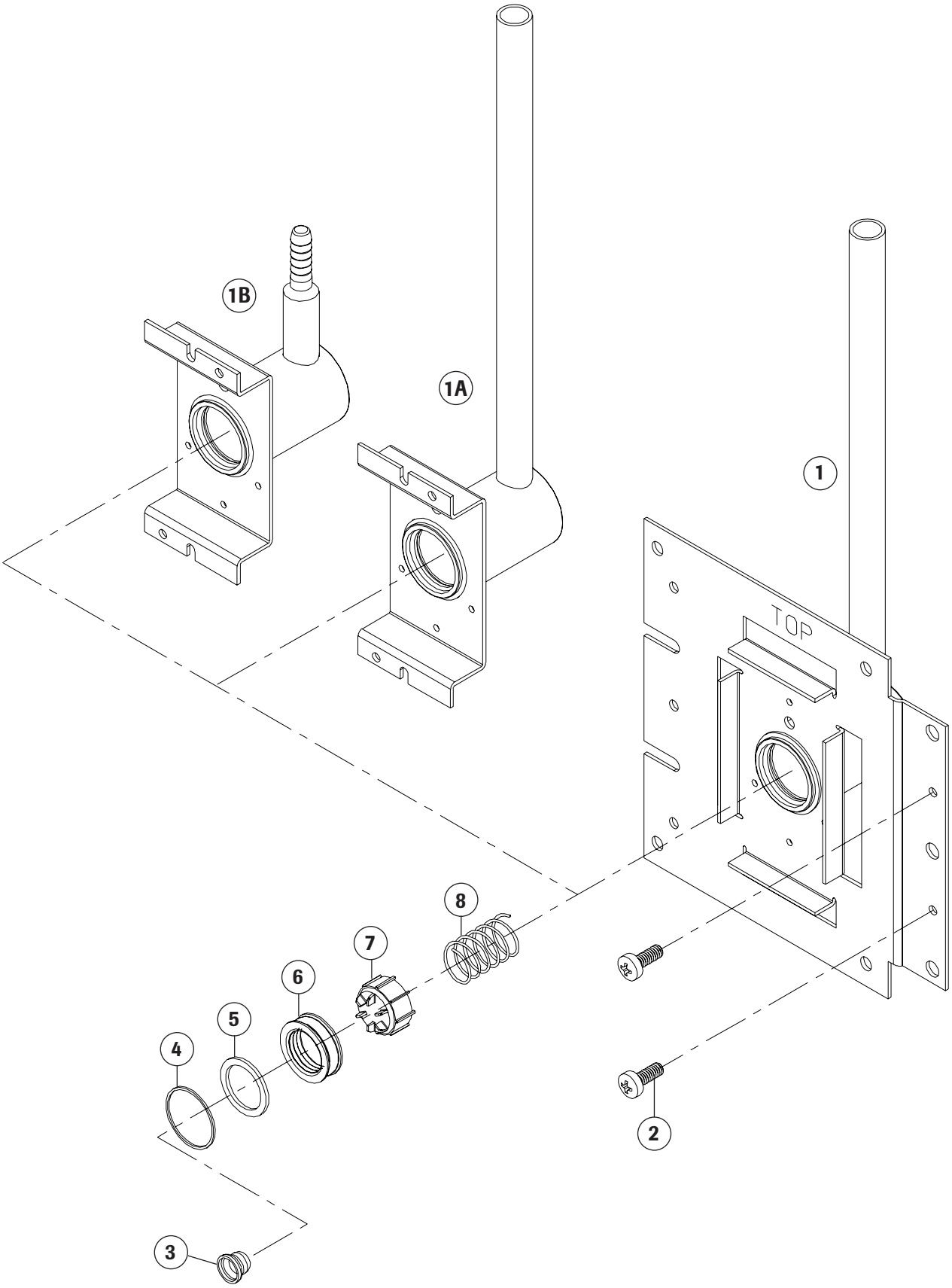
Item	Part No.	Description
1.	6-811757-PG	Mounting screw 2" (pkg of 10)
2.	6-525241-00	Slide stop
3.	6-811756-PG	Mounting screw 1 3/4" (pkg of 10)
4.	6-345008-00	Slide bracket
5.	6-415169-00	Insert (blank)
6.	6-325161-00	Trim Plate (5" spacing)
	6-325160-00	Trim plate (3 1/4" spacing) not shown
7.	6-345002-00	Slide bracket
8.	6-415168-00	Insert (blank)



Slide Accessories

Outlet Block Rough-In Assemblies

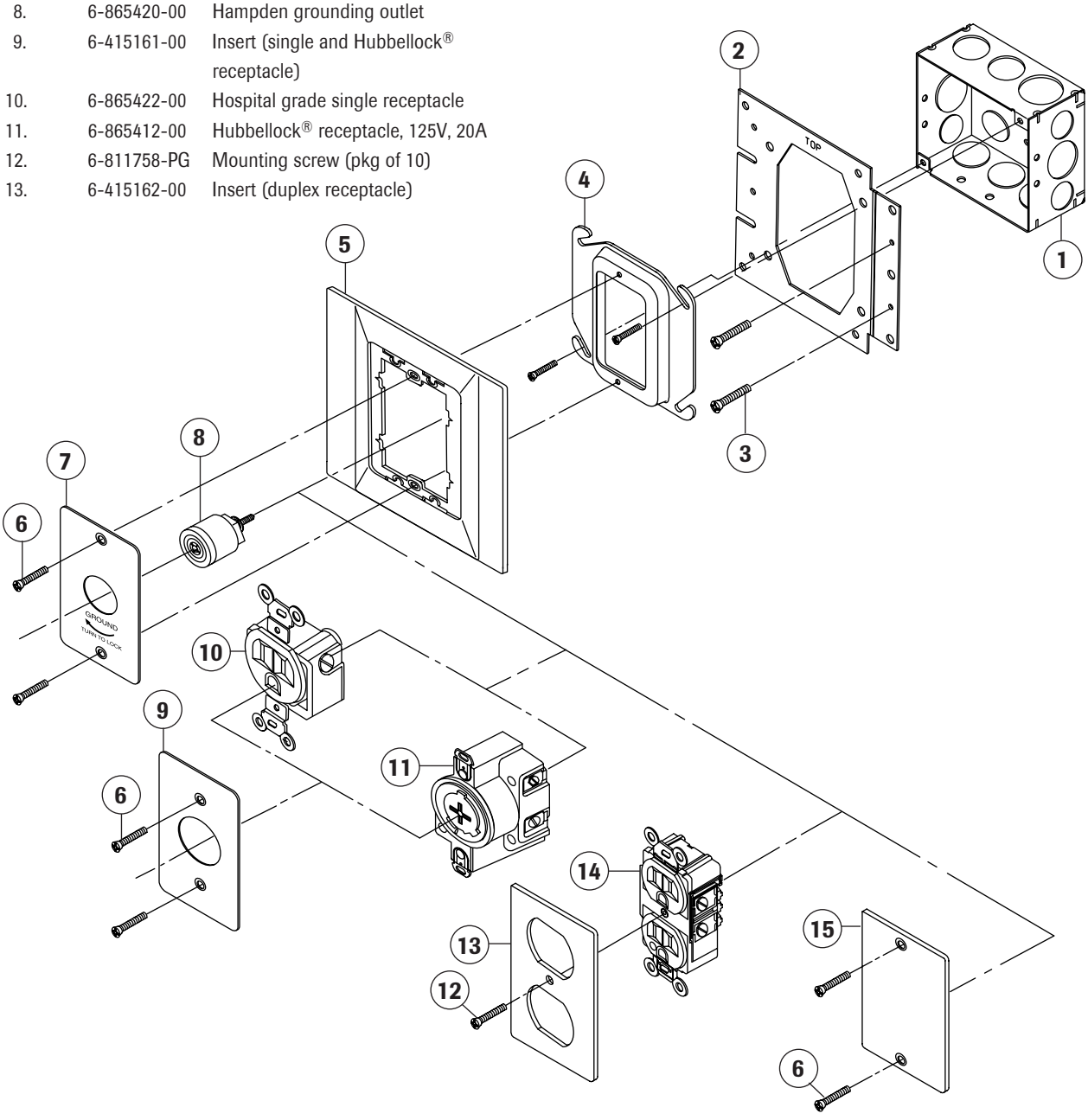
Item	Part No.			Description
1.				Concealed rough-in assembly (includes items 2, 4 through 10)
1A.				Console rough-in assembly (includes items 2 through 10)
1B.				Console rough-in assembly w/ hose barb connector (includes items 2 through 10)
	Concealed	Console	Console with Hose Barb	
	6-233110-00	6-233010-00	6-233210-00	Oxygen (U.S. labeling)
	6-233111-00	6-233011-00	6-233211-00	Nitrous oxide (U.S. and International labeling)
	6-233112-00	6-233012-00	6-233212-00	Air (U.S. labeling)
	6-233113-00	6-233013-00	6-233213-00	Vacuum (U.S. labeling)
	-	-	6-233213-53	Vacuum (U.S. Labeling, 5/16" hose barb)
	6-233114-00	6-233014-00	6-233214-00	Nitrogen (U.S. and International labeling)
	6-233115-00	6-233015-00	6-233215-00	Oxygen (International labeling)
	6-233116-00	6-233016-00	6-233216-00	Air (International labeling)
	6-233117-00	6-233017-00	6-233217-00	Vacuum (International labeling)
	6-233119-00	6-233019-00	6-233219-00	WAGD (U.S. labeling)
	-	-	6-233219-53	WAGD (U.S. labeling, 5/16" hose barb)
	6-233120-00	6-233020-00	6-233220-00	Carbon dioxide (U.S. and International labeling)
	6-233121-00	6-233021-00	6-233221-00	CO_2/O_2 mixture (CO_2 over 7.5%)
	6-233122-00	6-233022-00	6-233222-00	O_2/CO_2 mixture (CO_2 not over 7.5%)
	6-233123-00	6-233023-00	6-233223-00	He/O_2 mixture (He over 80.5%)
	6-233124-00	6-233024-00	6-233224-00	O_2/He mixture (He not over 80.5%)
2.	6-811665-PG			Screw (two required, pkg of 10)
3.	6-836843-PG			Plug (vacuum outlets only, pkg of 10)
4.	6-835900-PG			Retaining ring (pkg of 10)
5.	6-415037-PG			Washer (pkg of 10)
6.	6-655028-PG			Seal (pkg of 10)
7.	6-616272-PG			Poppet (pkg of 10)
8.	6-833426-PG			Spring (pkg of 10)



Outlet Block Rough-In Assemblies

Electrical Accessories

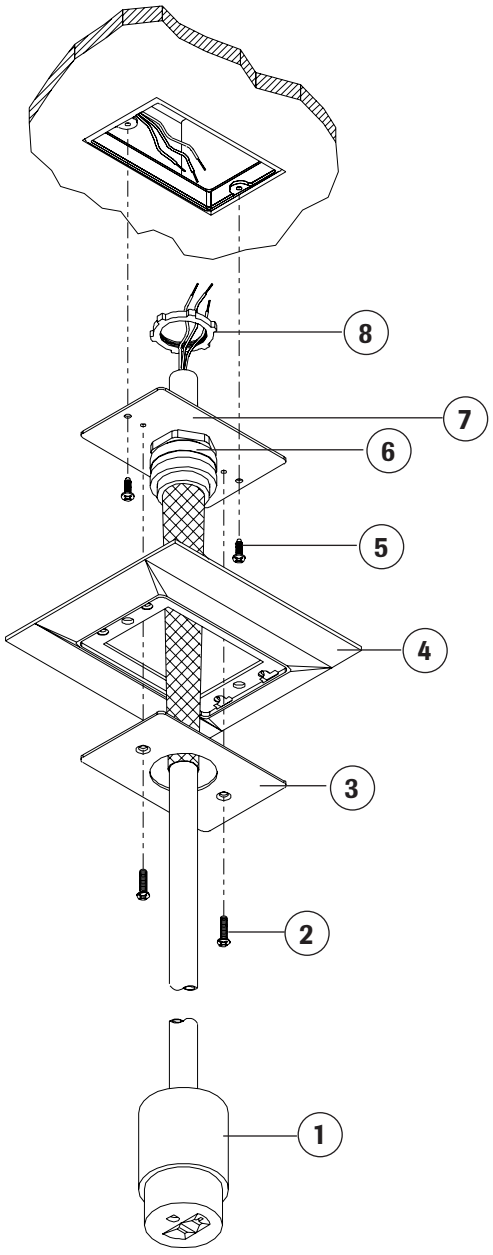
Item	Part No.	Description
1.	6-405015-00	Wall mounting box
2.	6-405014-00	Wall mounting plate
3.	6-811665-PG	Screw (two required, pkg of 10)
4.	6-405016-00	Plaster ring
5.	6-325161-00	Trim Plate (5" spacing)
	6-325160-00	Trim Plate (3 1/4" spacing) not shown
6.	6-812101-PG	Mounting screw (two required, pkg of 10)
7.	6-415164-00	Insert (grounding outlet)
8.	6-865420-00	Hampden grounding outlet
9.	6-415161-00	Insert (single and Hubbellock® receptacle)
10.	6-865422-00	Hospital grade single receptacle
11.	6-865412-00	Hubbellock® receptacle, 125V, 20A
12.	6-811758-PG	Mounting screw (pkg of 10)
13.	6-415162-00	Insert (duplex receptacle)
14.		Hospital grade duplex receptacle
	6-865445-00	125V, 20A, gray
	6-865415-00	125V, 15A, gray
	6-865443-00	125V, 20A, red
	6-865444-00	125V, 15A, red
	6-865489-00	125V, 20A, ivory
	6-865489-01	125V, 15A, ivory
15.	6-415169-00	Insert (blank)



Electrical Accessories

Electrical Ceiling Drop

Item	Part No.	Description
1.	6-865198-00	Hospital grade receptacle, 125 V, 20A
	6-865199-00	Hubbellock® receptacle, 125V, 20A
2.	6-812115-00	Screw (2 required)
3.	6-415161-00	Cover plate insert
4.	6-325161-00	Trim Plate (5" spacing)
5.	6-811608-00	Mounting screw (two required, pkg of 10)
6.	6-865124-00	Strain relief
7.	6-415188-00	Mounting plate
8.	6-821068-00	Locknut



Electrical Ceiling Drop

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